Owner's Manual for N-Verter™ Models

NVH600 – 600 Watt
NVH1000 – 1000Watt

High Power Output DC – AC Power Inverter Units

Read Carefully and Completely Before Using

Efficient, Quiet and Powerful
Rugged & Compact Design
Auto Low Battery Shutdown to Prevent Battery Damage

Lenmar Battery Solutions offers innovative products for consumers and encourages the safe and proper use of each power accessory to achieve the maximum performance of the product and the devices it powers. Read these instructions carefully to safely use your new N-Verter product.

Lenmar's N-Verter is an electronic device that converts low voltage DC (direct current) electricity from a battery to 110/120VAC (alternating current) standard household power. The AC output of this product is a modified sine wave with a voltage of 110/120 volts. With your Lenmar N-Verter you can power your laptops, computerized games, cell phones, camcorders, power tools, reading lamps, fans, and more.

Important: Before using your N-Verter, read and understand this owner's guide. Save these instructions–this owner's guide contains important safety instructions.

Safe Operating Guidelines

WARNING! Shock hazard The N-Verter generates the same AC power as a normal household wall outlet.

- Operate only in ventilated area away from flammables, flames and accumulating dangerous or explosive fumes
- Do not expose unit to water, rain or snow
- Always turn OFF unit and disconnect it from power when not in use
- Avoid exposure to direct sunlight and extreme temperatures (60-80°F or 15-25°C)
- Do not insert foreign objects into the outlet or ventilation slots.
- Do not open the unit: no replaceable parts inside
- Unit will not and should not operate heat-generating appliances such as hair-dryers, microwave ovens, electric blankets, toasters, etc.
- Compatible only with vehicles that have 12VDC Negative Ground electrical systems

Failure to follow the above may result in personal injury or damage to the N-Verter.

Operating your N-Verter

1. Connect the bare end of the clip lead cable to the power cable terminals on the N-Verter as shown in figure-2. Be sure to match the color of the cable ends to the color of the terminals (red to red and black to black) and tighten the screws in the terminals to hold the cable tightly.

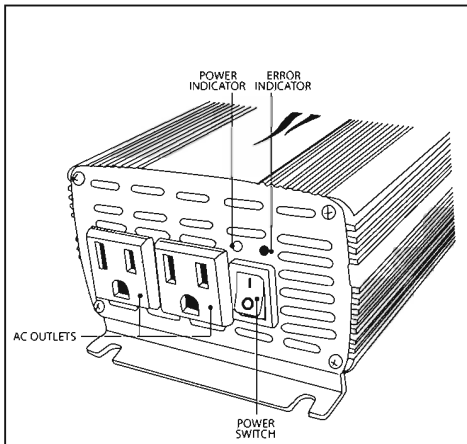
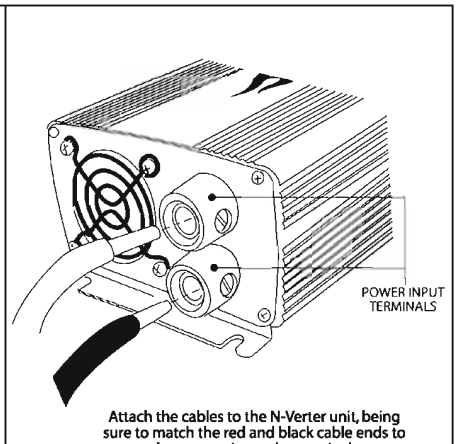


Figure-1



Attach the cables to the N-Verter unit, being sure to match the red and black cable ends to the appropriate color terminal.

Figure-2

2. ***Carefully*** attach the clip leads to the vehicle's battery terminals, being very careful not to let the red clip lead touch any metal other than the battery terminal, and also making sure to observe correct polarity (red to red, black to black).

   DANGER! – Do not create a short circuit when working with your vehicle's power system. Damage to your vehicle's internal electronics, explosion of the battery and personal injury may occur. NEVER test for the presence of power by "sparking" or shorting two wires together.

3. After the power connection is made, turn the power switch on the N-Verter to the ON position. The green power LED indicates the N-Verter is powered on and running with power available at the AC outlet(s).

   Note: If you are connected to a power block or power source other than the battery terminals, be aware that power may not be present if the vehicles ignition switch is OFF.

4. Plug an AC device into either of the three-prong AC receptacles and then turn it on. Ensure your device draws less than the continuous power rating of your N-Verter. The N-Verter's internal cooling fan will come on for heavy loads. To avoid discharging the battery, always disconnect the N-Verter from power when not in use.

   If the red status LED is on and the warning tone is sounding, an error condition exists. See the Troubleshooting section for suggestions on correcting the problem.

   Warning - When using you N-Verter with the vehicle's engine turned off, the battery is being drained. Be careful to re-start the engine or otherwise recharge the battery periodically to avoid draining the battery too deeply. The internal "low voltage shut-off" of the N-Verter does not guarantee that the remaining power left in the battery is enough to start the vehicle.

   Warning - Hot surface! The N-Verter housing may become uncomfortably warm, reaching 65°C (150°F) under extended high power operation. During operation, keep the N-Verter from materials that may be affected by high temperatures.

Modified Sine-Wave Output

THE OUTPUT OF THE N-VERTER IS NON-SINUSOIDAL. This type of output can typically be incompatible with small battery-operated products such as rechargeable flashlights, some rechargeable shavers, and nightlights that plug directly into an AC receptacle to recharge as well as certain battery chargers for battery packs used with power tools. If you wish to use one of these types of items with the N-Verter, monitor its temperature for the first ten minutes to insure excessive heat is not produced. The production of excessive heat indicates the device is not suitable for use with the N-Verter. The overheating does not occur with most devices which use their own AC adapters. The N-Verter is compatible with most of these chargers and AC adapters.

Troubleshooting

	Problem / Solution
RED Error LED is on & warning tone is sounding	Low Voltage Shutdown - Battery voltage has gone too low. Recharge the vehicle's battery before using the N-Verter.
	Over Voltage Shutdown – The input voltage has gone over 14.5VDC and the N-Verter has turned off to protect itself. The vehicle's charging system may have a problem.
	Continuous power rating has been exceeded - The AC device has higher wattage demands than the N-Verter's maximum rating can allow. The N-Verter unit is too small for that particular device. A higher rated N-Verter is needed to deliver the power that the AC device demands. Otherwise, use only lower power AC devices.
	Overheated – some of the units ventilation slots may be blocked or the outside air temperature is too high to allow the unit to cool itself properly. Turn the unit off and allow the unit to cool for at least 15 minutes. Make sure that ventilation slots are unobstructed and/or air temperature is cooler before restarting.
	The AC device has higher start-up or surge current than the N-Verter's maximum rating can allow. The N-Verter unit is too small for this particular device. A higher rated N-Verter is needed to deliver the power that the AC device demands. Otherwise, use a lower power AC device.
Green Power LED on the N-Verter unit does not light and/or the AC device does not operate	The clip leads may not be making proper connection. Check the connection of the clip leads at the battery posts.
	Battery voltage may be too low. Recharge the vehicle's battery and attempt again.
Buzzing sound in audio systems	Many inexpensive stereos or portable players will buzz when connected to the N-Verter because the modified sine wave of the N-Verter is not properly filtered by the electronic device's power supply. Higher quality devices will not buzz with the N-Verter.
Television interference	If the television signal is weak, the use of the N-Verter will cause a visual disturbance. Move the TV, antennae and/or the antennae cables away from the N-Verter. You may attempt to merely adjust the placement of the antennae or cables. Inferior antennae and cables will also cause TV interference during operation of the N-Verter.

Specifications

NVH600 - 600W

Maximum output power	600W (5 min.)
Surge output power	1000W (1 sec.)
Continuous output power	500W (4 hr.)
Output frequency	60+/-2HZ
Output voltage range	105V-125V AC , Modified Sine Wave
Input voltage range	11.5V-15V DC
AC receptacle	2x 3 Prong Socket
Dimensions	6.75 x 4.25 x 2.5 inches

NVH1000 - 1000W

Maximum output power	1000W (5 min.)
Surge output power	1200W (1 sec.)
Continuous output power	900W (4 hr.)
Output frequency	60+/-2HZ
Output voltage range	105V-125V AC , Modified Sine Wave
Input voltage range	11.5V-15V DC
AC receptacle	2x 3 Prong Socket
Dimensions	10 x 4.25 x 2.75 inches

All units also incorporate low voltage shut-off, over voltage shut-off, over-heat protection and short-circuit protection.

Limited 3 Year Warranty

This limited warranty starts from the date of original purchase and expires three years thereafter. If, during this period, any part, because of manufacturing defects or workmanship, fails to function properly under normal use it will be repaired at no charge for parts and labor or, at our option, the product will be replaced. The following is excluded: damages from delay or loss of use of equipment or damaged batteries, malfunctions resulting from misuse, tampering, unauthorized repairs, modifications or accident.

Package the unit and its accessories carefully using ample padding material to prevent damage in transit and ship it prepaid and insured to:

LENMAR ENTERPRISES, INC.
4035 Via Pescador
Camarillo, CA 93012

When sending in product for service, your package should include evidence of date and place of purchase. Enclose $10.00 for shipping and handling for addresses in the U.S. and $15.00 in Canada. For outside the U.S. and Canada, freight will vary depending upon ship-to address.

Proposition 65 Notice (California)

The following statement is required in the state of California pursuant to the settlement of an action brought by the Mateel Environmental Justice Foundation against multiple electronics and appliance manufacturers

WARNING: Handling the cord on this product will expose you to lead, a chemical known to the state of California to cause birth defects or other reproductive harm. Wash hands after handling.

For additional questions, comments or to explore other Lenmar battery solutions, visit our web site at: www.lenmar.com or call 805/384-9600